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Pre-Hospital PEWS Is Not A Useful Predictor Of The Need For Hospital Admission From ED

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Objective Physiological derangement, as measured by Paediatric Early Warning Score (PEWS) is used to try and identify children with critical illness at an early point to identify and intervene in children at risk. PEWS have shown some utility as a track and trigger system in hospital and also as a predictor of adverse outcome both in and out of hospital. We wanted to examine whether a single pre-hospital PEWS, based on observations made by ambulance staff, was associated with the need for hospital admission.

Methods A retrospective analysis of all patients aged <16 transported to hospital by the Scottish Ambulance Survey between 2011 and 2015. Data was matched to outcome data regarding hospital admission or discharge, and length of stay.

Results Full data was available for 21,202 paediatric patients, of whom 6340 (29.9%) were admitted to hospital, although this varied considerably by age (figure 1). Pre-hospital PEWS was associated with an odds ratio for admission of 1.173 (95% CI 1.160–1.187). Further analysis of PEWS shows Area Under ROC of 0.617 for PEWS, suggesting poor predictive ability. Gender does not significantly alter this (p=0.322) whereas addition of age increase the ROC to 0.630 (p<0.001) - see figure 2. There was no association between pre-hospital PEWS and length of hospital stay.

Discussion These data show that a single pre-hospital PEWS is a poor predictor of hospital admission for unselected patients in the Scottish Ambulance Service. The decision to admit a child to hospital is not only based on physiological derangement, and hence physiological based scoring systems such as PEWS cannot be used as the sole criteria for hospital admission, from an undifferentiated pre-hospital population.
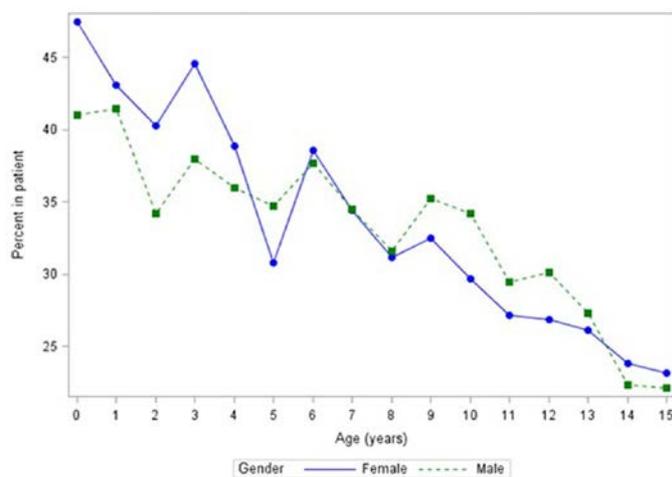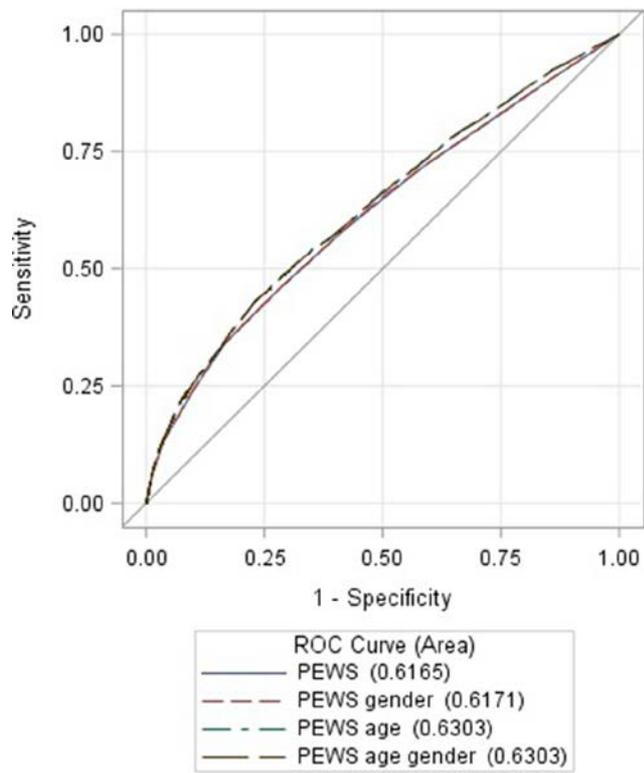
Figure 1 Percent in-patient admission by gender and age

Figure 2 ROC Curves for comparisons